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TECHNICAL NOTES
of the
STN PUB ALASKA FOREST RESEARCH CENTER
U. S. DEPARTMENT OF AGRICULTURE, FOREST SERVICE

JUNEAU, ALASKA

No. 43

Seed Production in a Scrub Stand

Large areas of forest land in Southeast Alaska support scrub stands with timber volumes below present limits of merchantability. These areas are poor sites, usually due to imperfect soil drainage. It may be years before the intensity of management warrants cultural measures for improving timber quality and quantity. But knowledge of the silvical characteristics of these stands is needed now.

Scrub stands will play an increasingly important role as pulp logging intensity increases. Seed from unmerchantable scrub stands is seedling in parts of many cutover areas because scrub stands often border commercial forest land being logged for pulp timber. Several questions must be answered concerning the silvical characteristics of these unmerchantable stands. One question is how seed production compares with production in typical merchantable stands. A bumper cone crop studied by Godman ^{1/} produced 91 pounds of seed per acre in a typical climax timber stand. Little other information is available on seed production in Southeast Alaska.

A scrub stand located on the Maybeso Experimental Forest, Prince of Wales Island, was selected in 1956 for a seed production study. Western redcedar (Thuja plicata Donn) comprised 73 percent of the stand by basal area. The remaining basal area was western hemlock (Tsuga heterophylla (Raf.) Sarg.) and mountain hemlock (T. mertensiana (Bong.) Carr.) and an occasional Sitka spruce (Picea sitchensis (Bong.) Carr.).

Ten seed traps, each six square feet in area, were placed one chain apart in two lines of five traps each within the stand in August 1956, a year with cone crops rated "medium" for spruce and redcedar, and "light" for western hemlock. Seed catch was counted in October, December, January, March, and May.

^{1/} Godman, R. M. Seed dispersal in Southeast Alaska. Alaska Forest Research Center Tech. Note No. 16, 2 pp. 1953.

About 15 million seeds ^{2/} (36 pounds) of western redcedar were produced per acre. Western and mountain hemlock combined produced a little over 2 million seeds per acre. Sitka spruce produced about 46,000 seeds per acre.

Seed dissemination occurred late in the season (table 1). A very small percentage of total seedfall of all species occurred before the October 25 examination: 8 percent for redcedar, none for spruce, and

Table 1.--Seedfall per acre in a scrub stand, October 1956 to May 1957

Date	No. seeds	Cumulative no. seeds	Percent	Cumulative percent
<u>Western redcedar</u>				
October 25	1,185,558	1,185,558	8	8
December 8	4,870,734	6,056,292	33	41
December 30	1,436,028	7,492,320	10	51
January 14	6,537,630	14,029,950	44	95
March 1	803,682	14,833,632	5	100
May 14	68,244	14,901,876	(1/)	100
<u>Western and mountain hemlock combined</u>				
October 25	38,478	38,478	2	2
December 8	122,694	161,172	6	8
December 30	4,356	165,528	(1/)	8
January 14	399,300	564,828	18	26
March 1	137,940	702,768	6	32
May 14	1,478,136	2,180,904	68	100
<u>Sitka spruce</u>				
October 25	--	--	--	--
December 8	21,054	21,054	45	45
December 30	1,452	22,506	3	48
January 14	18,876	41,382	41	89
March 1	--	41,382	--	89
May 14	5,082	46,464	11	100

1/ Less than 1 percent.

2/ Numbers of seed are based on the following amounts of cleaned seed per pound: Western redcedar..... 414,000
Hemlock (western and mountain combined)..... 205,500
Sitka spruce..... 210,000

less than 2 percent for hemlock. Only 40 percent of the cedar, 45 percent of spruce, and 7 percent of the hemlock seed had been released up to December 8. A high percentage of both cedar and spruce seedfall occurred during the period December 8 to January 14, 54 and 44 percent, respectively. Sixty-eight percent of the hemlock seedfall occurred after March 1, 1957.

Seed soundness, determined by a cutting test, was "good" for redcedar and averaged 92 percent sound for seed released prior to October 26, and 68 percent for seed collected on January 14. Hemlock seed soundness ranged from a high of 40 percent on the first examination, to a low of 25 percent on the January 14 examination. Sitka spruce averaged 50 percent sound for seed collected during the period December 30 to January 14.

This preliminary study indicates that large quantities of seed are produced by scrub trees, particularly western redcedar. The production of approximately 46 pounds of seed per acre of all species during a light-to-medium seed year compares favorably with the production of 91 pounds in a climax stand during a "bumper" year.

October 1959

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GPO 993185